

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A MOS image sensor comprising:
 - a pixel array formed from a plurality of pixels arranged in a matrix of rows and columns;
 - location processing means for providing a digital location number for each pixel of the pixel array;
 - signal processing circuitry for reading out signals from the pixel array and outputting processed pixel signals;
 - dead pixel comparator circuitry for receiving the processed pixel signals from the signal processing circuitry and examining the processed pixel signals to see if they are indicative of dead pixels;
 - location storage circuitry for receiving dead pixel information from the dead pixel comparator circuitry and for storing the digital location number generated by the location processing means for each dead pixel; and
 - location comparator circuitry for comparing the digital location number of a pixel that is being processed by the signal processing circuitry with the stored digital location numbers of dead pixels to determine if the pixel that is being processed corresponds to a dead pixel.
2. The image sensor of Claim 1, wherein the location processing means comprises a location shift register for indicating the digital location number of each of the pixels to the pixel array, the location comparator circuitry, and the location storage circuitry.
3. The image sensor of Claim 1, wherein the signal processing circuitry compensates for a dead pixel by repeating a pixel signal from a pixel that was read out prior to the dead pixel.
4. The image sensor of Claim 1, wherein the signal processing circuitry compensates for a dead pixel by averaging the pixel signal from a pixel that was read out prior to the dead pixel with a pixel signal from a pixel that is read out subsequent to the dead pixel.

5. The image sensor of Claim 1, wherein the dead pixel comparator is initially activated when the image sensor is first powered on to examine the processed pixel signals from each pixel only once.

6. The MOS image sensor of Claim 5, wherein the dead pixel comparator may be activated at later times to reexamine the processed pixel signals from each pixel so as to update the dead pixel digital location numbers stored in the location storage circuitry.

7. The image sensor of Claim 1, wherein the location storage circuitry is coupled to an off chip storage area such as an EPROM.

8. A method for correcting for dead pixels in a MOS imaging array, said imaging array including a plurality of pixels arranged in a matrix of rows and columns, said method comprising the steps of:

sequentially examining the signals from each pixel in the imaging array to determine if each pixel is a dead pixel;

storing a location number of each dead pixel;

after all of the dead pixels have been determined and their location numbers stored, proceeding with normal image processing of the imaging array, during which as the signal from each pixel is read out, the location number of each pixel is compared with the stored location numbers for dead pixels, and the signal from any pixel with a location number that corresponds to the stored location number of a dead pixel is compensated for.

9. The method of Claim 8, wherein the signal from a pixel with a location number that corresponds to the stored location number of a dead pixel is compensated for by repeating a pixel signal from a pixel that was read out prior to the dead pixel.

10. The method of Claim 8, wherein the signal from a pixel with a location number that corresponds to the stored location number of a dead pixel is compensated for by averaging the pixel signals from prior and subsequent pixels around the dead pixel.

11. The method of Claim 8, wherein the location numbers of the pixels are produced by a location shift register.

12. The method of Claim 8, wherein a location comparator is used to perform the step of comparing the location number of a pixel with a stored location number for a dead pixel.

13. The method of Claim 8, wherein the stored location numbers of the dead pixels may be updated by repeating the steps of sequentially examining the signals from each pixel in the imaging array to determine if each pixel is a dead pixel and then storing the location numbers of each dead pixel.

14. A method for correcting for dead pixels in a MOS imaging array, said imaging array including a plurality of pixels arranged in a matrix of rows and columns, said method comprising the steps of:

- (a) reading out a pixel signal from a pixel in the pixel array;
- (b) determining if the pixel signal from the pixel indicates that the pixel is a dead pixel;
- (c) storing a location number of a dead pixel;
- (d) repeating steps (a) to (c) for each pixel in the pixel array until all of the pixels have been read out; and
- (e) thereafter comparing the location number of each pixel that is being read out with the stored location numbers of dead pixels and compensating for the signal from a pixel whose location number corresponds to the stored location number of a dead pixel.

15. The method of Claim 14, wherein compensating for the signal from a dead pixel in step (e) is carried out by repeating a pixel signal from a pixel that was read out prior to the dead pixel.

16. The method of Claim 14, wherein compensating for the signal from a dead pixel in step (e) is carried out by averaging the pixel signals from other pixels near the dead pixel.

17. The method of Claim 14, wherein the stored location numbers of the dead pixels may be updated by repeating steps (a) to (d).

18. A method for correcting for dead pixels in a MOS imaging array, said imaging array including a plurality of pixels arranged in a matrix of rows and columns, said method comprising the steps of:

(a) generating a location number for a pixel in the pixel array and reading out the signal from the pixel;

(b) determining if the signal from the pixel indicates that the pixel is a dead pixel;

(c) if the signal from the pixel indicates that the pixel is a dead pixel, storing the location number of the dead pixel in a storage area;

(d) repeating steps (a) to (c) until all of the pixels have been read out;

(e) after all of the pixels have initially been read out and the dead pixel location numbers have been stored, reading out a signal from a pixel in the pixel array;

(f) comparing the location number of the pixel that is currently being read with the stored location numbers of the dead pixels;

(g) compensating for a pixel whose location number corresponds to a stored location number of a dead pixel; and

(h) repeating steps (e) to (g) for all of the pixels in the pixel array to produce each frame of the image signal.

19. The method of Claim 18, wherein the process in step (g) for compensating for a dead pixel includes outputting a signal from a pixel that was read out prior to the dead pixel.

20. The method of Claim 18, wherein the process in step (g) for compensating for a dead pixel includes outputting a signal that is an average of signals from pixels near the dead pixel.

21. An image sensor comprising:

a pixel array formed from a plurality of pixels arranged in a matrix of rows and columns;

signal processing circuitry for reading out signals from the pixel array and outputting processed pixel signals;

a location shift register for incrementing location numbers for pixels in the pixel array; and

dead pixel comparator circuitry for receiving the processed pixel signals from the signal processing circuitry and examining the processed pixel signals to see if

they are indicative of dead pixels, and for indicating when the location number of a pixel that is determined to be a dead pixel should be stored.

22. The image sensor of Claim 21, wherein all of the circuitry of the image sensor is fabricated on a single MOS chip.

23. The image sensor of Claim 21, further comprising location storage circuitry for storing the location numbers of dead pixels.

24. The image sensor of Claim 23, further comprising location comparator circuitry for comparing the location number of a pixel that is being processed by the signal processing circuitry with the stored location numbers of dead pixels from the location storage circuitry to determine if the pixel that is being processed corresponds to a dead pixel.